82420

The Operating Characteristics of the PTSD Checklist in Detecting PTSD in HIV+ Substance Abusers

Andreas R. Bollinger
Carlos A. Cuevas
Melanie J. Vielhauer
Erin E. Morgan
Terence M. Keane

Andreas R. Bollinger, PhD, is affiliated with Dominican University of California, the VA Northern California Health Care System, Boston University School of Medicine, and the VA Boston Health Care System.

Carlos A. Cuevas, PhD, is affiliated with the College of Criminal Justice, Northeastern University, and the Boston Medical Center.

Melanie J. Vielhauer, PhD, is affiliated with the Boston University School of Medicine and the VA Boston Health Care System.

Erin E. Morgan, MA, is affiliated with the University of California, San Diego–San Diego State University Joint Doctoral Program and the Boston Medical Center.

Terence M. Keane is affiliated with the Boston University School of Medicine and the VA Boston Health Care System.

This work was supported by the HIV/AIDS Treatment Adherence, Health Outcomes and Cost Study, a collaboration of six federal entities within the U.S. Department of Health and Human Services (DHHS): The Center for Mental Health Services, which had the lead administrative responsibility, and the Center for Substance Abuse Treatment, both components of the Substance Abuse and Mental Health Services Administration; the HIV/AIDS Bureau of the Health Resources and Services Administration; the National Institute of Mental Health, the National Institute on Drug Abuse, and the National Institute on Alcohol Abuse and Alcoholism, all parts of the National Institutes of Health. The content of this publication does not necessarily reflect the views or policies of these or any other agencies of the DHHS.

Address correspondence to: Andreas R. Bollinger, PhD, Department of Counseling Psychology, Dominican University of California, 50 Acacia Avenue, San Rafael, CA 94901 (E-mail: andreas.bollinger@dominican.edu).

Journal of Psychological Trauma, Vol. 7(4) 2008

doi:10.1080/19322880802384251

ABSTRACT. The psychometric properties of the PTSD Checklist-Civilian version (PCL-C) were calculated for a population of HIV-seropositive individuals, using diagnoses and scores from the Clinician-Administered PTSD Scale (CAPS) as the criterion measure. Results indicated rates of posttraumatic stress disorder (PTSD) higher than that of the general population, with 12.3% of participants meeting criteria for PTSD in the past month. The PCL-C exhibited excellent internal consistency with a Cronbach's alpha of .94 for the whole measure. Receiver Operating Characteristic curve yielded an optimum cut score of 52 to determine the presence of PTSD as measured by the CAPS. This resulted in a sensitivity of .71, a specificity of .84, and a diagnostic efficiency of .82. Although this cut score yielded a slightly higher diagnostic efficiency, the cut score of 50 provided the optimal balance between sensitivity (.86) and specificity (.79)

KEYWORDS. PTSD Checklist, HIV-seropositive, operating characteristics, cut score, psychiatric status rating scales, screening instrument

Investigators have recently begun to examine rates of posttraumatic stress disorder (PTSD) in HIV-seropositive individuals, with preliminary data suggesting that the disorder is highly prevalent in this population. In a study of 61 HIV-positive homosexual/bisexual men, Kelly et al. (1998) found that approximately 36% of participants met criteria for a lifetime diagnosis of PTSD either in relationship to receiving an HIV diagnosis or to other traumatic events. Kimerling et al. (1999) assessed PTSD symptoms in 67 inner-city African American women with HIV and found that 35% likely met full criteria for a current diagnosis of PTSD. In a more recent study, at two county HIV clinics, Martinez, Israelski, Walker, and Koopman (2002) estimated that 42% HIV-seropositive female participants met full diagnostic criteria for current PTSD. As noted by Andrykowski, Cordova, Studts, and Miller (1998), differences in sample characteristics and methodology make it difficult to directly compare PTSD prevalence rates across studies. Nonetheless, the rates documented in these studies are considerably higher than the estimated 7.8% lifetime prevalence of PTSD in the general population (Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995), indicating a heightened lifetime risk for the development of this disorder among individuals living with HIV.

Despite increased awareness of the elevated rate of PTSD in this population, available data suggest that many HIV-seropositive individuals are

operties of the PTSD Checklist-Civil-
for a population of HIV-seropositive
res from the Clinician-Administered
measure. Results indicated rates of
higher than that of the general popu-
eeting criteria for PTSD in the past
ellent internal consistency with a
whole measure. Receiver Operating
ium cut score of 52 to determine the
: CAPS. This resulted in a sensitivity
agnostic efficiency of .82. Although
r diagnostic efficiency, the cut score
etween sensitivity (.86) and specific-

IV-seropositive, operating character-
ng scales, screening instrument

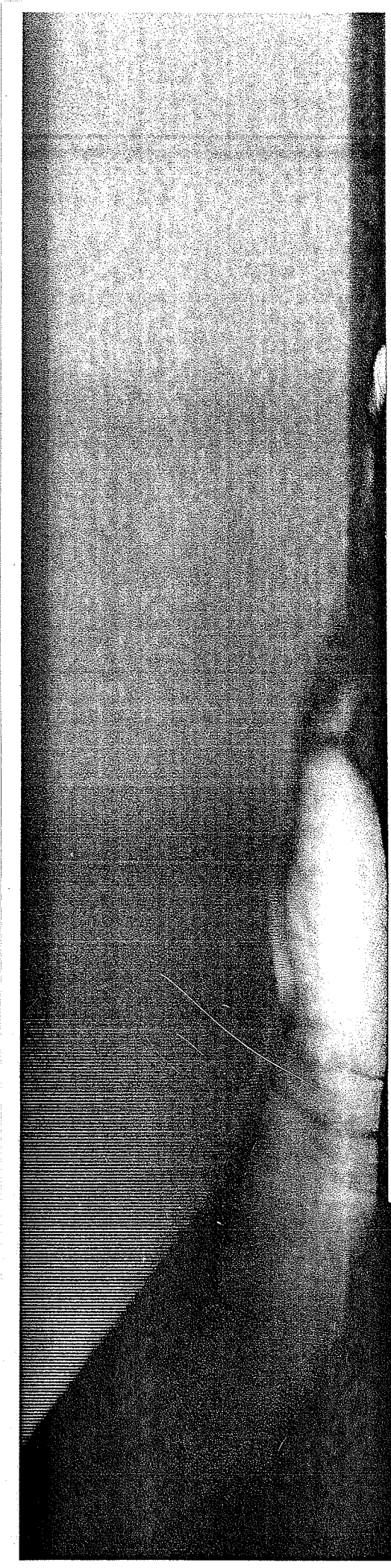
o examine rates of posttraumatic
tive individuals, with preliminary
ghly prevalent in this population.
exual/bisexual men, Kelly et al.
of participants met criteria for a
relationship to receiving an HIV
Kimerling et al. (1999) assessed
n American women with HIV and
for a current diagnosis of PTSD.
HIV clinics, Martinez, Israelski,
ated that 42% HIV-seropositive
c criteria for current PTSD. As
s, and Miller (1998), differences in
/ make it difficult to directly com-
dies. Nonetheless, the rates docu-
ly higher than the estimated 7.8%
eral population (Kessler, Sonnega,
licating a heightened lifetime risk
ong individuals living with HIV.
levated rate of PTSD in this popu-
/ HIV-seropositive individuals are

not receiving adequate mental health screening and treatment. In fact, Martinez et al. (2002) found that more than half of participants in their sample who likely met full criteria for PTSD were receiving neither psychotherapy nor any type of psychopharmacological intervention at the time of assessment. Left untreated, this debilitating disorder has the potential to become a chronic intractable condition, to significantly compromise social and/or occupational functioning, and to decrease quality of life (Keane & Barlow, 2002).

Moreover, a growing area of concern, from both individual and health care delivery system perspectives, is the potential adverse impact of PTSD on the health status and health care utilization of HIV-infected individuals (Brief et al., 2004). This concern stems, in part, from a documented association between PTSD and poorer health outcomes in clinical and community samples of HIV-seronegative trauma survivors. Comprehensive review of this literature is beyond the scope of this article, and the reader is referred to other articles for additional information (Friedman & Schnurr, 1995; Green & Kimerling, 2004; Schnurr & Jankowski, 1999).

In brief, in HIV-seronegative trauma survivors PTSD has been linked to poorer self-perceived physical health and functional status (e.g., Schnurr & Spiro, 1999; Zatzick et al., 1997), increased physical health complaints and self-reports of medical illnesses (e.g., Barrett et al., 2002; Boscarino, 1997; Schnurr, Ford, et al., 2000), increased rates of substance use (Brief et al., 2004), increased morbidity (as evidenced by more objective indicators of health such as physician-diagnosed medical conditions and laboratory examination results, e.g., Boscarino & Chang, 1999; Schnurr, Spiro, & Paris, 2000), and higher service utilization rates (e.g., Schnurr, Friedman, Sengupta, Jankowski, & Holmes, 2000). Further, a number of studies have shown that these associations persist even after controlling for other potential confounding variables such as health risk behaviors (e.g., smoking and alcohol use; Boscarino, 1997; Schnurr & Spiro, 1999), demographic factors (e.g., age, gender, education, income; Barrett et al., 2002; Boscarino, 1997; Schnurr & Spiro, 1999), and comorbid psychiatric disorders (e.g., Zatzick et al., 1997). Finally, several recent investigations have demonstrated that PTSD plays a mediational role in the relationship between trauma exposure and physical health (e.g., Schnurr & Spiro, 1999; Taft, Stern, King, & King, 1999, Wagner, Wolfe, Rotnitsky, Proctor, & Erickson, 2000).

Although the data are currently quite limited, there is some evidence of a link between PTSD and poor health status in HIV-infected individuals.



In a study examining PTSD in HIV-seropositive individuals with chronic pain, the disorder was found to be associated with higher ratings of pain intensity and pain-related functional impairment, regardless of health status or other risk factors (Smith, Egert, Winkel, & Jacobson, 2002). In addition, Kimerling et al. (1999) found that HIV-infected women with histories of trauma exposure experienced a more rapid decline in CD4+/CD8+ ratios than those with no trauma history. Among individuals exposed to trauma, those with PTSD showed an even greater decline on these immune parameters than those without the disorder, suggesting the possibility of accelerated HIV disease progression.

Taken together, these findings underscore the importance of systematic screening for PTSD in the HIV-seropositive population. Improved detection of the disorder should offer treatment providers a more complete understanding of factors affecting the mental and physical health of their patients. Better recognition of the disorder might also trigger increased referrals for more comprehensive assessment and specialized mental health treatment, ultimately leading to reductions in PTSD symptoms and their negative impact on physical health, improved psychosocial functioning and quality of life, and decreased service utilization.

Hence, there appears to be a need for an efficient, psychometrically sound screening measure to detect PTSD in HIV-seropositive individuals that is appropriate for use in both mental health and primary care settings. Ease of use in primary care settings may be especially important given the data provided by Martinez et al. (2002) indicating that a significant number of HIV-seropositive individuals with PTSD may be more likely to have contact with medical than mental health providers. To date, however, researchers have not explored the psychometric properties of potential screening tools for PTSD in this population.

The purposes of our study were to evaluate the diagnostic utility of the PTSD Checklist–Civilian Version (PCL–C) as a screening measure for PTSD in HIV-positive individuals and to provide guidelines for appropriate cut scores to maximize diagnostic efficiency. The PCL–C (Weathers, Litz, Herman, Huska, & Keane, 1993) is a brief, self-administered instrument for assessing PTSD that has been widely used in both research settings and clinical practice. It has shown generally strong convergent and divergent validity (e.g., Blanchard, Jones-Alexander, Buckley, & Forneris, 1996; Mueser et al., 2001; Ruggiero, Del Ben, Scotti, & Rabalais, 2003) and excellent internal consistency and test–retest reliability (e.g.,

opositive individuals with chronic
ıciated with higher ratings of pain
impairment, regardless of health
ɡert, Winkel, & Jacobson, 2002).
nd that HIV-infected women with
ɛd a more rapid decline in CD4+/
ıma history. Among individuals
howed an even greater decline on
ithout the disorder, suggesting the
ıogression.
derscore the importance of sys-
e HIV-seropositive population.
ıould offer treatment providers a
rs affecting the mental and phys-
ɛcognition of the disorder might
nore comprehensive assessment
ɛnt, ultimately leading to reduc-
gative impact on physical health,
nd quality of life, and decreased

or an efficient, psychometrically
'SD in HIV-seropositive individ-
ı mental health and primary care
ettings may be especially impor-
nez et al. (2002) indicating that a
ive individuals with PTSD may
medical than mental health pro-
s have not explored the psycho-
ening tools for PTSD in this

valuate the diagnostic utility of the
'L–C) as a screening measure for
to provide guidelines for appropri-
ɛfficiency. The PCL–C (Weathers,
is a brief, self-administered instru-
ɛn widely used in both research
ıown generally strong convergent
ıd, Jones-Alexander, Buckley, &
ɡgiero, Del Ben, Scotti, & Rabalais,
cy and test–retest reliability (e.g.,

Blanchard et al., 1996; Lang, Laffaye, Satz, Dresselhaus, & Stein, 2003; Mueser et al., 2001; Ruggiero et al., 2003; Smith, Redd, DuHamel, Vickberg, & Ricketts, 1999) across a variety of populations. Prior research also supports the utility of the PCL as a screening tool with diverse populations, including combat veterans, female veterans in primary care, male veterans in ambulatory care, women enrolled in a health maintenance organization, predominantly female motor vehicle accident victims and sexual assault survivors, mothers of pediatric cancer survivors, female breast cancer survivors, and college students (Andrykowski et al., 1998; Blanchard et al., 1996; Dobie et al., 2002; Forbes, Creamer, & Biddle, 2001; Lang et al., 2003; Manne, DuHamel, Gallelli, Sorgen, & Redd, 1998; Ruggiero et al., 2003; Spiro, Hankin, Leonard, Stylianou, & Kazis, 2000; Walker, Newman, Dobie, Ciechanowski, & Katon, 2002). In fact, when PCL results are validated against diagnostic status on such "gold standard" structured interviews as the Clinician-Administered PTSD Scale (CAPS; Blake et al., 1990) and the Structured Clinical Interview for *DSM–IV* (SCID; First, Spitzer, Gibbon, & Williams, 2002), diagnostic efficiency has generally been shown to be high ranging from approximately 0.8 to 0.9 (e.g., Andrykowski et al., 1998; Blanchard et al., 1996; Forbes et al., 2001; Manne et al., 1998; Spiro et al., 2000).

In a companion study to this research, Cuevas and colleagues (2006) examined the construct validity and factor structure of the PCL among HIV-seropositive individuals who also have substance use and psychiatric disorders. The results indicated that the PCL is psychometrically sound when used to screen for PTSD. Furthermore, the PCL demonstrated high internal consistency for the overall scale as well as for each of the *Diagnostic and Statistic Manual for Mental Disorders* (4th ed. [*DSM–IV*]; American Psychiatric Association, 1994) established symptom clusters. The significant and moderate correlations between the PCL and measures of other psychological variables (e.g., depression, anxiety, and hostility) that are often related to PTSD symptomatology supported its construct validity.

Besides the PCL–C, there are currently two other brief screens that have been used in primary care settings with positive results. Using a seven-item screening scale (Breslau, Peterson, Kessler, & Schultz, 1999), Kimerling et al. (2006) reported a high test–retest reliability (r = .84) and increased detection of previously unrecognized PTSD in primary care clinics at a large medical center. The short screening scale was empirically derived from interview items in a large epidemiological

telephone survey that best discriminated respondents with a PTSD diagnosis. The Primary Care PTSD Screen (Prins et al., 2003) is a four-item measure derived from factor analyses that identified four underlying factors specific to the PTSD construct. The Primary Care PTSD Screen is mandated in Veterans Affairs (VA) settings and has demonstrated excellent reliability, sensitivity, and specificity among patients with substance use disorders (Kimerling, Trafton, & Nguyen, 2006). In addition to being significantly briefer and less comprehensive than the PCL, both screens omit specific trauma probe questions. Although there are limited published data on these measures, they appear to be psychometrically sound screens for PTSD with this identified population and setting.

Noteworthy, however, is the fact that studies examining the validity of the PCL in different populations have recommended varying cut scores for optimum diagnostic efficiency. Utilizing the *DSM–III–R* (American Psychiatric Association, 1987) diagnostic criteria for PTSD, the original PCL validation study yielded a suggested cut score of 50 based on a sample of male Vietnam veterans (Weathers et al., 1993). In contrast, most subsequent studies have used *DSM–IV* (American Psychiatric Association, 1994) diagnostic criteria to assess PTSD in samples of male and/or female veterans or civilians with various types of trauma exposure, often noncombat in nature. These later studies have typically recommended lower cut points, ranging from 30 to 45 (Andrykowski et al., 1998; Blanchard et al., 1996; Dobie et al., 2002; Lang et al., 2003; Manne et al., 1998; Ruggiero et al., 2003; Spiro et al., 2000; Walker et al., 2002). A number of factors have been suggested to account for these observed discrepancies in suggested cut scores, including differences on demographic variables (e.g., gender), type and severity of trauma exposure, recency of exposure, and severity and complexity of PTSD symptoms (Blanchard et al., 1996; Walker et al., 2002). Overall, these data highlight the necessity to validate the PCL for use as a screening measure in new populations, such as those diagnosed with HIV, and to establish population-specific cut scores.

In summary, although there appears to be a high prevalence of PTSD among dually diagnosed HIV-seropositive individuals, brief and accurate screening measures for PTSD have not been thoroughly validated with this population. The primary purpose of this article was to evaluate the civilian version of the PTSD Checklist (PCL–C) as a screening measure to assess for symptoms of PTSD during the past month. A secondary goal was to identify the optimal PCL–C cutoff score for this population.

ated respondents with a PTSD diag-
en (Prins et al., 2003) is a four-item
ses that identified four underlying
ct. The Primary Care PTSD Screen
/A) settings and has demonstrated
d specificity among patients with
Trafton, & Nguyen, 2006). In addi-
l less comprehensive than the PCL,
robe questions. Although there are
sures, they appear to be psychomet-
ith this identified population and

nat studies examining the validity of
e recommended varying cut scores
Utilizing the *DSM–III–R* (American
ostic criteria for PTSD, the original
sted cut score of 50 based on a sam-
hers et al., 1993). In contrast, most
IV (American Psychiatric Associa-
ss PTSD in samples of male and/or
ous types of trauma exposure, often
udies have typically recommended
45 (Andrykowski et al., 1998; Blan-
2; Lang et al., 2003; Manne et al.,
al., 2000; Walker et al., 2002). A
d to account for these observed dis-
cluding differences on demographic
rity of trauma exposure, recency of
y of PTSD symptoms (Blanchard et
ll, these data highlight the necessity
ening measure in new populations,
nd to establish population-specific

s to be a high prevalence of PTSD
itive individuals, brief and accurate
not been thoroughly validated with
of this article was to evaluate the
st (PCL–C) as a screening measure
g the past month. A secondary goal
off score for this population.

METHOD

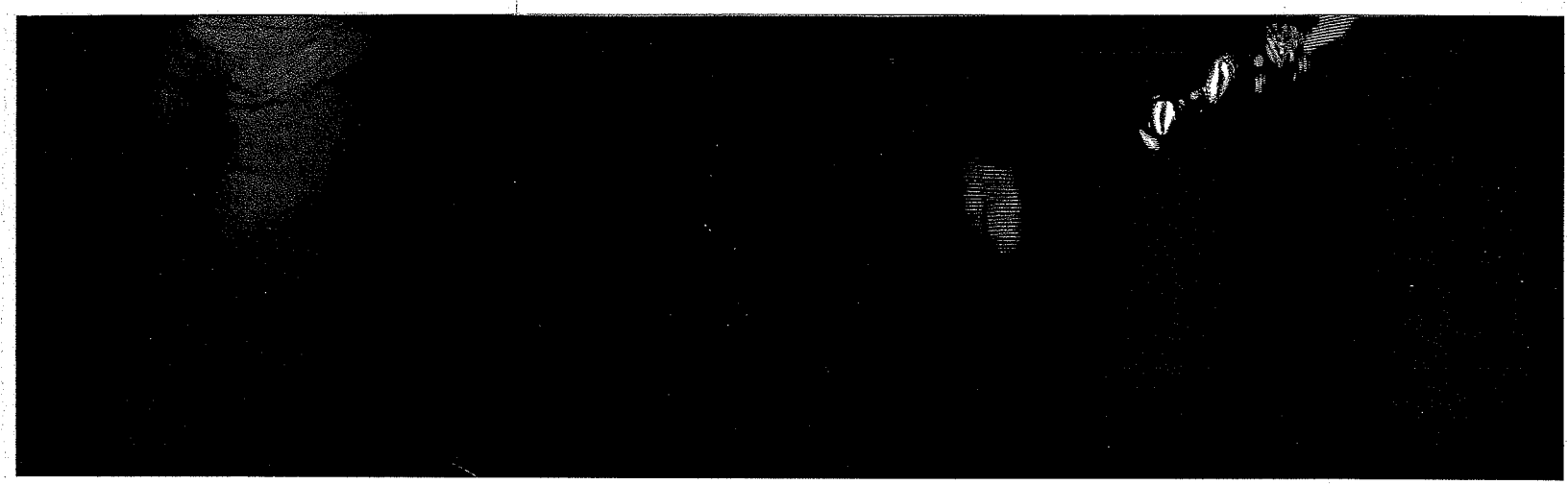
Participants

Participants were 57 HIV-seropositive patients from the Infectious Disease (ID) Clinics of two urban medical centers (an inner-city public hospital and a VA Medical Center) who were enrolled in a multisite study focusing on HIV/AIDS treatment adherence, health outcomes, and cost. Inclusion criteria for the study were a diagnosis of substance abuse and/or dependence in the past year and the presence of at least one of nine possible Axis I disorders or antisocial or borderline personality disorders.

Measures

PCL–C. The PCL (Weathers et al., 1993) is a 17-item self-administered questionnaire based on the *DSM–IV* criteria for PTSD. The PCL includes symptoms from all three symptom clusters of PTSD: re-experiencing (5 symptoms), numbing/avoidance (7 symptoms), and hyperarousal (5 symptoms). On the PCL–C, participants are instructed to rate the degree to which they have been bothered by given symptoms in response to a "stressful life experience" during the past month, using a 5-point Likert scale ranging from 1 (*not all*) to 5 (*extremely*). The sum of all responses can range from 17 to 85.

The original version of the PCL was developed and validated for use with combat veterans. The PCL has also been used to measure PTSD symptoms in a variety of populations including college students (Ruggiero et al., 2003), motor vehicle accidents and sexual trauma (Blanchard et al., 1996), cancer and medical treatment survivors (Andrykowski et al., 1998; Cordova et al., 1995; Jacobsen et al., 1998; Smith et al., 1999), mothers of pediatric cancer patients (Manne et al., 1998), female veterans in primary care (Lang et al., 2003), primary care patients (Stein, McQuaid, Pedrelli, Lenox, & McCahill, 2000) and outpatient clients (Ventureyra, Yao, Cottraux, Note, & Mey-Guillard, 2002). The PCL–C has shown excellent internal consistency, with alphas regularly reported above .90 (Blanchard et al., 1996; Weathers et al., 1993) and test–retest reliability to be .96 (Weathers et al., 1993). Diagnostic utility using a "gold standard" measure, such as the CAPS (Blake et al., 1995) or the PTSD module of the SCID (First et al., 2002), has reportedly ranged from .79 to .90 with different populations and varying cutoff or "cut" scores ranging from 30 to 50 (Blanchard et al., 1996; Dobie et al., 2002; Forbes et al., 2001; Walker et al., 2002).



CAPS. The CAPS (Blake et al., 1995; Blake et al., 1990) is a semistructured interview designed to assess core and associated symptoms of PTSD as described by the *DSM–IV* (American Psychiatric Association, 1994). The CAPS includes questions designed to assess the 17 symptoms of PTSD, as well as symptoms frequently associated with PTSD, such as anxiety, depression, guilt, homicidality, and suicidality (Wolfe & Keane, 1993). The interviewer is instructed to provide ratings for frequency and intensity of each symptom, using a 5-point Likert scale ranging from 0 to 4. These ratings yield both dichotomous diagnostic information about PTSD (i.e., present vs. not present) as well as continuous symptoms scores.

Although there are at least nine established CAPS scoring rules to date (Blanchard et al., 1995; Weathers, Ruscio, & Keane, 1999), this study used the original scoring rule (frequency ≥ 1, intensity ≥ 2) to determine symptom presence (Blake et al., 1995; Blake et al., 1990). This "one/two" rule has been described as the most suitable to avoid false negatives and is a simple scoring procedure which would be appropriate for routine clinical use (Weathers et al., 1999). The diagnosis of PTSD in the past month requires that all *DSM–IV* diagnostic criteria be met including trauma exposure; the minimum, necessary endorsement of symptoms from the respective clusters (reexperiencing, avoidance, hyperarousal); functional impairment; and symptom duration of at least 1 month.

The CAPS has shown excellent interrater agreement, with coefficients ranging from .52 to .99 for symptom clusters (Weathers, Keane, & Davidson, 2001). Kappa coefficients for diagnostic agreement have typically been above .75 (Weathers et al., 2001), and internal consistency (alpha) has generally been above .80 for the full scale. Validity for the CAPS has been supported by significant correlations with other measures of PTSD (e.g., Mississippi Scale, Minnesota Multiphasic Personality Inventory Posttraumatic Stress Disorder scale, and SCID symptoms). Diagnostic agreement for the CAPS with the SCID has rendered kappas between .65 and .75 (Weathers et al., 2001).

Procedures

Participants were interviewed by a masters- or doctoral-level evaluator trained in administering the assessment measures. The SCID–I (First et al., 2002) and SCID–II (First, Spitzer, Gibbon, & Williams, 1997) were administered to determine Axis I and II disorders, respectively.

995; Blake et al., 1990) is a semis-
:s core and associated symptoms of
(American Psychiatric Association,
designed to assess the 17 symptoms
:ntly associated with PTSD, such as
ty, and suicidality (Wolfe & Keane,
o provide ratings for frequency and
point Likert scale ranging from 0 to
nous diagnostic information about
) as well as continuous symptoms

established CAPS scoring rules to
ıers, Ruscio, & Keane, 1999), this
(frequency ≥ 1, intensity ≥ 2) to
: et al., 1995; Blake et al., 1990).
ibed as the most suitable to avoid
oring procedure which would be
Weathers et al., 1999). The diagno-
:s that all *DSM–IV* diagnostic crite-
)osure; the minimum, necessary
respective clusters (reexperiencing,
l impairment; and symptom dura-

terrater agreement, with coefficients
ısters (Weathers, Keane, & Davidson,
ıstic agreement have typically been
nd internal consistency (alpha) has
l scale. Validity for the CAPS has
tions with other measures of PTSD
Multiphasic Personality Inventory
and SCID symptoms). Diagnostic
D has rendered kappas between .65

ı masters- or doctoral-level evalua-
sment measures. The SCID–I (First
ıitzer, Gibbon, & Williams, 1997)
is I and II disorders, respectively.

Evaluators administered the CAPS to assess for PTSD, and participants were asked to complete the PCL–C independently to provide information about symptom severity for PTSD. Training for the SCID and the CAPS was done by licensed clinical psychologists at the National Center for PTSD who specialized in standardized psychosocial assessments. Evaluators were then approved, supervised, and evaluated on the SCID and the CAPS by an onsite assessment supervisor throughout the length of the study.

RESULTS

Descriptives

The average age of participants ($N = 57$) was 41.6 years. Slightly more than two thirds of the sample were men, and slightly more than half of the participants were African American, with Latinos/Hispanics and Caucasians accounting for 17.5% and 21.1%, respectively. Of the 11 (19.3%) participants who met criteria for PTSD in the past year, 7 (12.3%) also met criteria for the past month. Those participants who met criteria for the past month were considered "PTSD positive" for the purpose of examining the diagnostic utility of the PCL–C. All participants completed the PCL–C, but 3 participants either refused to start or complete the CAPS. Additional sample descriptives are presented in Table 1.

The most frequently endorsed traumatic events were life threatening illnesses or injuries (80.7%), physical assaults (79.0%), and transportation accidents (63.2%). Detailed information regarding these and other traumatic events are presented in Table 2. PCL–C summary scores ranged from 17 to 72 ($M = 42.1$, $SD = 15.5$), and although women exhibited significantly higher PCL–C scores ($M = 49.9$, $SD = 14.1$) than men ($M = 39.0$, $SD = 15.1$), $t(51) = 2.4$, $p = .02$, gender was not significantly associated with PTSD diagnoses, $\chi^2(1, N = 50) = .64$, $p = .42$. As expected, individuals diagnosed with PTSD had significantly higher PCL–C scores ($M = 62.1$, $SD = 10.1$) than those without the diagnosis ($M = 39.7$, $SD = 13.9$), $t(48) = 4.1$, $p < .001$.

Performance of the PCL–C

The internal consistency of the entire PCL–C (Cronbach's alpha) was .94. At the symptom cluster level, alphas for reexperiencing, avoidance, and hyperarousal were .90, .86, and .82, respectively. The overall correlation of

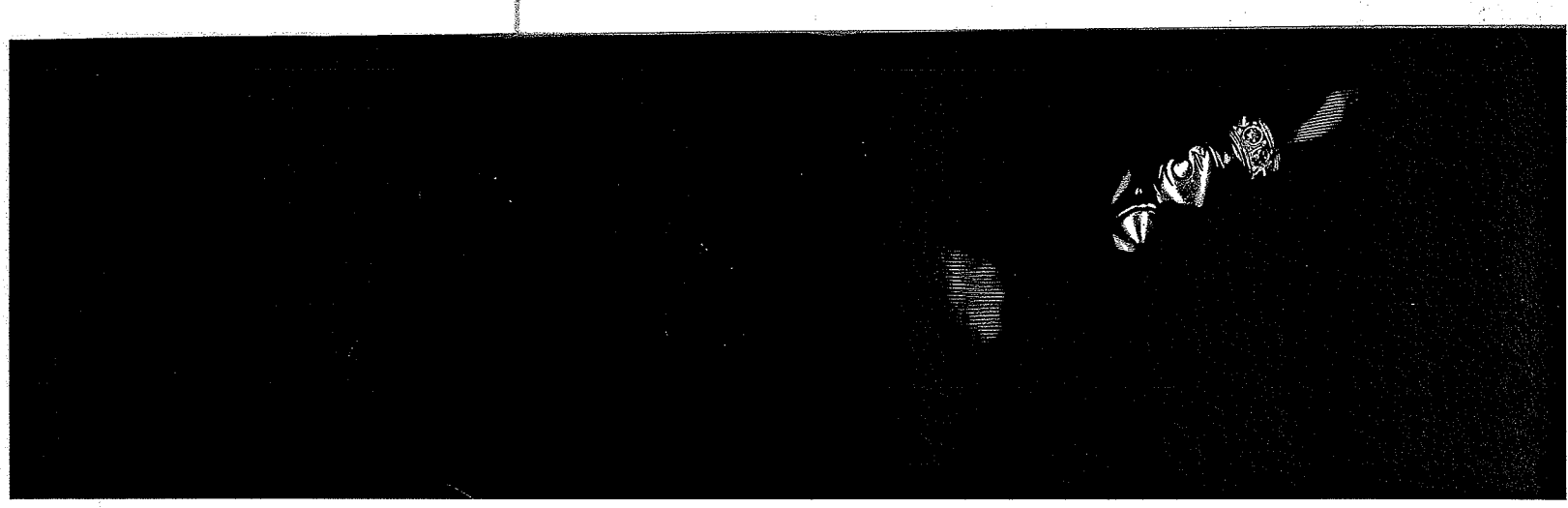


TABLE 1. Sample descriptives

	n	%
Gender		
Male	40	70.2
Female	17	29.8
Ethnicity		
African American	31	54.4
Latino/Hispanic	10	17.5
Caucasian/European American	12	21.1
Native American	2	3.5
Other	2	3.5
Marital status		
Never married	38	66.7
Married	1	1.8
Widowed	1	1.8
Separated	9	15.8
Divorced	8	14.0
Sexual orientation		
Straight/Heterosexual	38	66.7
Gay/Homosexual	8	14.0
Bisexual	10	17.5
Undecided/In transition/Not sure	1	1.8
Diagnostic categories		
Major depression	36	63.2
Dysthymia	4	7.0
Bipolar (I or II)	11	19.3
Panic d/o	9	16.8
PTSD (past year)	11	19.3
GAD[a]	3	5.3
Adjustment d/o[b]	0	0.0
Mood d/o with psychotic features	7	12.3
Nonmood psychotic d/o	18	31.6
Borderline personality d/o	15	26.3
Antisocial personality d/o	28	49.1
Substance use d/o diagnosis		
Alcohol dependence/Abuse only	3	5.3
Drug dependence/Abuse only	21	36.8
Both alcohol and drug diagnosis	33	57.9

Note. Age range in years = 30–60 ($M = 41.6$, $SD = 6.35$); education range in years = 5–16 ($M = 11.5$, $SD = 2.20$). PTSD = posttraumatic stress disorder. [a]If Major Depression or Dysthymia present in past year, generalized anxiety disorder (GAD) was not assessed. [b]If any other Axis I disorder was diagnosed, adjustment disorder was not assessed.

e descriptives

	n	%
	40	70.2
	17	29.8
	31	54.4
	10	17.5
	12	21.1
	2	3.5
	2	3.5
	38	66.7
	1	1.8
	1	1.8
	9	15.8
	8	14.0
	38	66.7
	8	14.0
	10	17.5
	1	1.8
	36	63.2
	4	7.0
	11	19.3
	9	16.8
	11	19.3
	3	5.3
	0	0.0
	7	12.3
	18	31.6
	15	26.3
	28	49.1
	3	5.3
	21	36.8
	33	57.9

M = 41.6, *SD* = 6.35); education
D = 2.20). PTSD = posttraumatic
on or Dysthymia present in past
GAD) was not assessed. [b]If any
ed, adjustment disorder was not

TABLE 2. Lifetime trauma exposure in study participants

Event	Experienced *n* (%)	Witnessed *n* (%)	Learned About *n* (%)
Natural disaster	18 (31.6)	13 (22.8)	14 (24.6)
Fire/explosion	15 (26.3)	18 (31.6)	25 (43.9)
Transportation accident	36 (63.2)	32 (56.1)	40 (70.2)
Serious accident	13 (22.8)	16 (28.1)	24 (42.1)
Toxic substances	5 (8.8)	6 (10.5)	11 (19.3)
Physical assault	45 (79.0)	47 (82.5)	44 (77.2)
Assault with a weapon	33 (57.9)	38 (66.7)	41 (71.9)
Sexual assault	16 (28.1)	8 (14.0)	27 (47.4)
Unwanted sexual experience	18 (31.6)	10 (17.5)	22 (38.6)
Combat/war zone	4 (7.0)	9 (15.8)	25 (43.9)
Captivity	6 (10.5)	6 (10.5)	9 (15.8)
Life-threatening illness	46 (80.7)	37 (64.9)	41 (71.9)
Severe suffering	20 (35.1)	23 (40.4)	26 (45.6)
Sudden violent death	N/A	22 (38.6)	33 (57.9)
Death of someone close	N/A	31 (54.4)	41 (71.9)
Harm caused	8 (14.0)	20 (35.1)	23 (40.4)
Other	4 (7.0)	3 (5.3)	4 (7.0)

Note. N/A = not applicable.

the PCL–C total score with the CAPS total severity score was significant, $r(50) = 0.63$, $p < .001$.

Using the recommended cutoff score of 50 (Weathers & Ford, 1996), the PCL–C accurately diagnosed 85.7% (6 of 7) of the individuals with PTSD and 79.1% (34 of 43) of the individuals without PTSD, yielding a sensitivity score of 0.86 and a specificity score of 0.79. Using this cut score, overall diagnostic efficiency was .80. Additional prediction parameters from this and other studies using the PCL are presented in Table 3.

For continuous measures, such as the PCL–C, receiver operating characteristic (ROC) methods have been used in clinical settings to transform the range of scores into a dichotomous outcome (e.g., having or not having a particular diagnosis, such as a PTSD diagnosis by the CAPS). The ROC curve plots sensitivity versus (1-specificity) to provide a measure of the overall accuracy of the scale (Sackett, Haynes, & Tugwell, 1985) and to help identify the ideal cut point that maximizes the detection of true positives and true negatives. The area under the curve for the PCL–C compared with CAPS diagnosis was .91 (95% CI = .81–.99; see Figure 1).

TABLE 3. Diagnostic utility of the PTSD Checklist (PCL)–Civilian Version across various studies

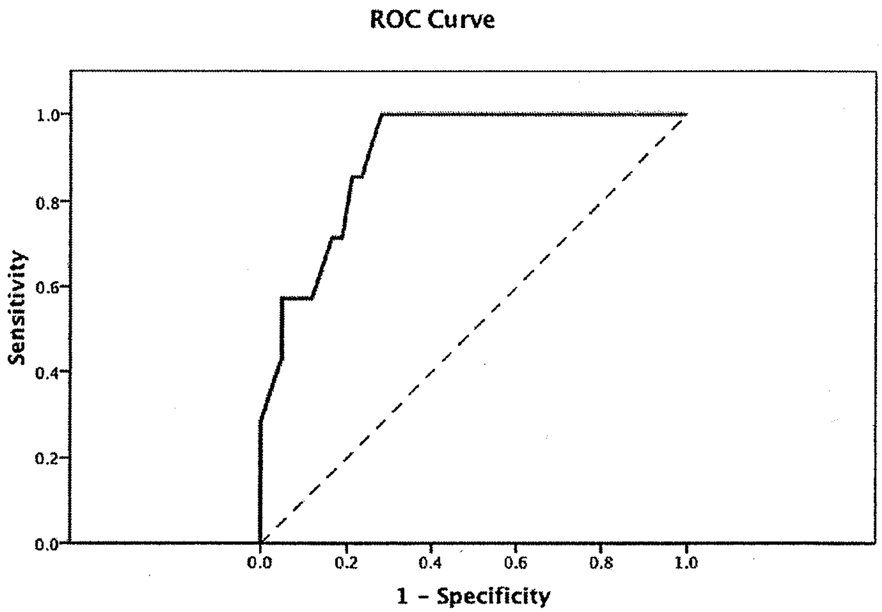
Source	*N*	PCL Cut Score	Sensitivity	Specificity	Positive Predictive Power	Negative Predictive Power	Diagnostic Efficiency
HIV + substance users[a]	57	50	.86	.79	.40	.97	.80
Current sample		52[b]	.71	.84	.42	.95	.82
Breast cancer[a] (Andrykowski et al., 1998)	82	30[c]	1.00	.83	.24	.10	.80
Motor vehicle accident, sexual assault[a] (Blanchard et al., 1996)	40	44[c]	.94	.86	.85	.95	.90
Female veterans[a] (Dobie et al., 2002)	282	38[c]	.79	.79	—	—	—
Vietnam combat veterans[a] (Forbes et al., 2001)	97	50[b]	.91	.40	.85	.93	.80
Female veterans in primary care[d] (Lang et al., 2003)	49	28–30[c]	.94–.78	.68–.71	—	—	.78–.74
Mothers of pediatric cancer[ec] (Manne et al., 1998)	65	50[b]	.75	.89	.30	.98	.88
College students (Ruggiero et al., 2003)	392	44[b,f]	.90	.95	.70	.99	.95
Male VA ambulatory patients (Spiro et al., 2000)	469	42[c]	.89	.90			.90
Adults in primary care[b] (Stein et al., 2000)	132	—[f]	.32	.94	.42	.91	—
French PTSD & nonclinical participants (Ventureyra et al., 2002)	113	44[b]	.97	.87	.97	.87	.94
HMO sample of women[a] (Walker et al., 2002)	261	30[c]	.82	.76	.28	.97	—
Ours	50	50	.86	.79	.40	.97	.80
Vietnam veterans[c] (N = ????) (Weathers & Ford, 1996)	50[1]	50[1]	.82	.84			

Note. [a]Clinician-Administered PTSD Scale was the criterion measure used. [b]Recommended PCL cut score. [c]Derived PCL cut score. [d]Composite International Diagnostic Interview v2.1- PTSD section was the criterion measure used. [e]Structured Clinical Interview for *DSM–IV* was the criterion measure used. [f]Symptom cluster method/DSM algorithm PCL cut score used.

College students (Ruggiero et al., 2003)	392	44[b,f]	.90	.95	.70	.99	.95
Male VA ambulatory patients (Spiro et al., 2000)	469	42[c]	.89	.90			.90
Adults in primary care[b] (Stein et al., 2000)	132	—f	.32	.94	.42	.91	—
French PTSD & nonclinical participants (Ventureyra et al., 2002)	113	44[b]	.97	.87	.97	.87	.94
HMO sample of women[a] (Walker et al., 2002)	261	30[c]	.82	.76	.28	.97	—
Ours	50	50	.86	.79	.40	.97	.80
Vietnam veterans[c] (N = ????) (Weathers & Ford, 1996)	50[1]	50[1]	.82	.84			

Note. [a]Clinician-Administered PTSD Scale was the criterion measure used. [b]Recommended PCL cut score. [c]Derived PCL cut score. [d]Composite International Diagnostic Interview v2.1- PTSD section was the criterion measure used. [e]Structured Clinical Interview for *DSM–IV* was the criterion measure used. [f]Symptom cluster method/DSM algorithm PCL cut score used.

FIGURE 1. Receiver Operating Characteristic (ROC) Curve (Sensitivity vs. [1-Specificity]) for PTSD Checklist Score Versus Clinician-Administered PTSD Scale Diagnosis of PTSD.



Diagonal segments are produced by ties.

This yielded an optimum cut score of 52, which provided a sensitivity of .71, a specificity of .84, and an overall diagnostic efficiency of .82 (see Table 3). Although this cut score yielded a slightly higher diagnostic efficiency, the cut score of 50 provided the optimal balance between sensitivity (.86) and specificity (.79).

DISCUSSION

As expected, there were high rates of traumatic exposure and PTSD in this sample of HIV+ substance abusers. As with primary care clinics and other medical settings (Lang et al., 2003; Stein et al., 2000), an ID Clinic can be a central location or clinical entry point to identify individuals with PTSD. Because assessing dually or multiply diagnosed

individuals can be diagnostically complicated and resource consuming (Bollinger, Riggs, Blake, & Ruzek, 2000; Read, Bollinger, & Sharkansky, 2003), it can be critical for clinicians working in these settings to have a brief, efficient, and accurate screening measure that can be used to identify at-risk patients. This can then facilitate the appropriate and timely referral to an integrated psychosocial model for delivering HIV/AIDS and mental health treatment (Bollinger, Greene, Soto, & Wagner-Raphael, 2000). The PCL–C has been used as a screening instrument with other medical populations (Lang et al., 2003; Smith et al., 1999; Stein et al., 2000). Our purpose was to examine the utility of the PCL–C as a screening instrument in an ID Clinic with HIV-seropositive adults.

Consistent with previous research, the PCL–C exhibited excellent internal consistency. It also correlated well with CAPS severity scores, although this correlation was not as high as that of other studies (Blanchard et al., 1996). The area under the curve in the ROC analysis was slightly higher than what has been reported in previous research. Whereas other studies have consistently shown area under the curve values ranging from .84 to .89 (Dobie et al., 2002; Lang et al., 2003; Walker et al., 2002), our sample had an area of .91. Finally, the overall diagnostic efficiency (.82) of the PCL–C for this sample was consistent with the majority of previously published studies, which typically indicate diagnostic efficiency to be .74 and above (Andrykowski et al., 1998; Blanchard et al., 1996; Dobie et al., 2002; Forbes et al., 2001; Lang et al., 2003; Manne et al., 1998; Spiro et al., 2000; Ventureyra et al., 2002; Walker et al., 2002).

Overall, the PCL–C performed well in screening for both PTSD and non-PTSD in a mixed sample of dually diagnosed HIV+ adults. Unlike other nonmilitary samples, which typically exhibit lower cut scores, in our sample the PCL–C was most effective with a cut score of 52 for diagnostic efficiency. However, the PCL–C demonstrated the best balance of sensitivity and specificity with a cut score of 50 with only a slight loss in diagnostic efficiency. In other studies deriving optimum cut scores for diagnostic efficiency, scores were typically lower ranging from 28 to 44 (Andrykowski et al., 1998; Blanchard et al., 1996; Dobie et al., 2002; Lang et al., 2003; Ventureyra et al., 2002; Walker et al., 2002).

Although the PCL–C demonstrated excellent internal consistency and a high area under the ROC curve, the overall diagnostic efficiency was not as robust as reported in other studies. There are a number of possible explanations for this. First, this particular sample reported trauma

omplicated and resource consuming
, 2000; Read, Bollinger, & Sharkan-
nicians working in these settings to
ate screening measure that can be
his can then facilitate the appropri-
ıted psychosocial model for deliver-
eatment (Bollinger, Greene, Soto, &
–C has been used as a screening
ılations (Lang et al., 2003; Smith et
urpose was to examine the utility of
ıment in an ID Clinic with HIV-

ch, the PCL–C exhibited excellent
ted well with CAPS severity scores,
as high as that of other studies
ınder the curve in the ROC analysis
been reported in previous research.
ntly shown area under the curve val-
t al., 2002; Lang et al., 2003; Walker
of .91. Finally, the overall diagnostic
this sample was consistent with the
studies, which typically indicate
above (Andrykowski et al., 1998;
2002; Forbes et al., 2001; Lang et al.,
al., 2000; Ventureyra et al., 2002;

/ell in screening for both PTSD and
ıally diagnosed HIV+ adults. Unlike
ypically exhibit lower cut scores, in
ective with a cut score of 52 for diag-
–C demonstrated the best balance of
score of 50 with only a slight loss in
ies deriving optimum cut scores for
'pically lower ranging from 28 to 44
ard et al., 1996; Dobie et al., 2002;
2002; Walker et al., 2002).
ed excellent internal consistency and
he overall diagnostic efficiency was
dies. There are a number of possible
particular sample reported trauma

histories reflecting a broad diversity of precipitating stressors or Criterion A events (see Table 2). All of the possible types of traumatic events listed on the Life Events Checklist (the trauma query used prior to the CAPS interview) were endorsed by participants as either having been personally experienced, witnessed, and/or learned about with values ranging from 7% (other) to 80.7% (life threatening illness or injury) of the sample. Second, life-threatening illness, physical assaults, and assaults with a weapon were the most frequently endorsed events (80.7%, 79.0%, and 57.9%, respectively), which is markedly different from previous studies that primarily focused on only one predominant traumatic event. Furthermore, the identified traumatic events in these studies were typically not physical/weapon assaults or illness, but rather war trauma, sexual assault, and/or motor vehicle accidents (Blanchard et al., 1996; Dobie et al., 2002; Forbes et al., 2001; Walker et al., 2002).

It is perhaps also reasonable to consider the degree to which issues other than PTSD and trauma exposure may impact PCL–C efficacy for this population. Given the extensive, sustained, and life-threatening health problems people with HIV/AIDS typically experience, it can often be difficult to identify the particular "causes" of a given symptom—such as differentiating symptoms of trauma exposure from symptoms of a chronic medical condition. Although specific data regarding this phenomenon were not collected during this study, evaluators reported anecdotal evidence that participants often had difficulty attributing given symptoms to a specific source. This is supported to some degree by the Cluster D or hyperarousal items, which exhibited the lowest reliability. Many of the questions in this cluster can easily be attributed or due to medical problems or psychiatric comorbidity (e.g., difficulty sleeping, difficulty concentrating). In addition, various other questions in the PCL–C could be attributed to problems related to physical illness or other comorbid conditions present in this sample (e.g., feeling that life would be cut short, feeling distant or cut off from others, less interest in activities previously enjoyable). As part of the study inclusion criteria, the participants also exhibited significant comorbid mental health conditions (e.g., 63% of the sample was also diagnosed with major depression), which may have impacted their response to PCL–C items.

Given the prevalence of trauma exposure and the negative effects of PTSD on treatment outcomes, adherence, health, and health-related quality of life in HIV+ adults (Bollinger, Brief, & Keane, 2001; Brief et al., 2004; Kimerling et al., 1999), there is compelling evidence to screen for PTSD among ID clinic patients. The PCL–C appears to be effective in screening

for PTSD, and would be helpful in referring at-risk patients for treatment. However, given the complexity of physical illness and symptomatology in this population, caution should be exercised when using the PCL–C as a diagnostic instrument. In addition, because the symptoms of PTSD substantially overlap with those of other anxiety and depressive disorders, awareness of the PCL–C's specificity should be noted. The best use of the PCL–C or other screening measures in dually or multiply diagnosed populations, such as this one, is as a springboard to a more thorough assessment of PTSD and its symptoms (Bollinger et al., 2000; Loranger, 1992; Read et al., 2003).

Several limitations of this study are important to note. First, the generalizability of these results may be limited. Our findings were based on data from dually diagnosed HIV-seropositive adults with current or recent substance use disorders and mental health diagnoses and may not generalize to other samples. Second, our sample consisted of individuals who volunteered for a paid research study, which may reflect qualitative differences from the general ID Clinic population. Although the study was widely advertised within the ID Clinics at both settings, we received inquiries from only approximately 10% of the total number of registered patients. Third, for prospective HIV+ participants to meet study criteria, they were required to have met criteria for both a substance use and a mental health disorder in the past year. As a consequence, the recruitment of dually diagnosed individuals may make the results less generalizable to other HIV populations.

Although it has been documented that cut scores need to be adjusted based on gender and trauma type differences (Blanchard et al., 1996), future research should continue to examine the effects of patient population and clinical/research settings and to determine the ideal derived PCL–C cut score for each type of patient and setting. Furthermore, from a psychometric perspective, the PCL–C could benefit from examining its concurrent validity with other measures, structured interviews, and laboratory-based tests of physiologic reactivity (Watson, 1990) as well as its discriminant validity in this population. Staff in primary care settings typically place a premium on being able to quickly and accurately assess mental disorders (Dobie et al., 2002). To that end, it would be of interest to examine the ways in which the PCL–C compares to other brief PTSD screening measures (Breslau et al., 1999; Connor & Davidson, 1999; Metzler-Brody, Churchill, & Davidson, 1999; Prins et al., 2003). Finally, the longitudinal validity of the PCL–C in measuring

ferring at-risk patients for treatment.
hysical illness and symptomatology
e exercised when using the PCL–C
on, because the symptoms of PTSD
ıer anxiety and depressive disorders,
should be noted. The best use of the
ın dually or multiply diagnosed pop-
ıngboard to a more thorough assess-
llinger et al., 2000; Loranger, 1992;

/ are important to note. First, the
ay be limited. Our findings were
sed HIV-seropositive adults with
)rders and mental health diagnoses
amples. Second, our sample con-
ered for a paid research study,
rences from the general ID Clinic
s widely advertised within the ID
ved inquiries from only approxi-
registered patients. Third, for pro-
study criteria, they were required
tance use and a mental health dis-
quence, the recruitment of dually
the results less generalizable to

l that cut scores need to be adjusted
ifferences (Blanchard et al., 1996),
amine the effects of patient popula-
ınd to determine the ideal derived
tient and setting. Furthermore, from
L–C could benefit from examining
ıeasures, structured interviews, and
c reactivity (Watson, 1990) as well
)pulation. Staff in primary care set-
)eing able to quickly and accurately
., 2002). To that end, it would be of
ıich the PCL–C compares to other
eslau et al., 1999; Connor & David-
ll, & Davidson, 1999; Prins et al.,
lidity of the PCL–C in measuring

symptomatic change of PTSD symptoms for this population while in treatment (Forbes et al., 2001) would also be of interest. As suggested by Smith and colleagues (1999), the utility of the PCL–C as a screening measure could be greatly improved by including supplementary questions regarding duration of symptoms and their impact on daily functioning.

In summary, the PCL–C appears to be an effective way to screen for PTSD with HIV+ individuals, and positive diagnoses can be corroborated by clinician-administered interviews, as is the case with other disorders that also require extensive assessment, such as personality disorders (Bollinger et al., 2000; Loranger, 1992). A two-step screening process could provide a more efficient use of clinical resources and time by administering thorough PTSD evaluations only after patients screen positive on the PCL–C. However, further work is necessary to establish an optimal screening tool for ID Clinics. Given the high degree of potential service utilizations by patients with chronic medical conditions (Lang et al., 2003), the ability to identify and subsequently treat PTSD-related symptoms is an important consideration from a cost perspective as well. By addressing PTSD, patients may be better able to attend to the rigorous demands of medical treatment, such as antiretroviral medications, which then may positively affect their health outcomes and quality of life (Brief et al., 2004; Kimerling et al., 1999).

REFERENCES

American Psychiatric Association. (1987). *The diagnostic and statistical manual of mental disorders* (3rd ed., rev.). Washington, DC: Author.

American Psychiatric Association. (1994). *The diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: Author.

Andrykowski, M. A., Cordova, M. J., Studts, J. L., & Miller, T. W. (1998). PTSD after treatment for breast cancer: Prevalence of diagnosis, and use of the PTSD Checklist–Civilian Version (PCL–C) as a screening instrument. *Journal of Consulting and Clinical Psychology, 66*, 586–590. doi:10.1037//0022-006X.66.3.586

Barrett, D. H., Doebbeling, C. C., Schwartz, D. A., Voelker, M. D., Falter, K. H., Woolson, R. F., et al. (2002). Posttraumatic stress disorder and self-reported physical health status among U.S. military personnel serving during the Gulf War period: A population-based study. *Psychosomatics, 43*, 195–205. doi: 10.1176/appi.psy.43.3.195

Blake, D. D., Weathers, F. W., Nagy, L. M., Kaloupek, D. G., Gusman, F. D., Charney, D. S., et al. (1995). The development of a Clinician-Administered PTSD Scale. *Journal of Traumatic Stress, 8*, 75–90.

Blake, D. D., Weathers, F. W., Nagy, L. M., Kaloupek, D. G., Klauminzer, G., Charney, D. S., et al. (1990). A clinician rating scale for assessing current and lifetime PTSD: The CAPS-1. *Behavior Therapy, 13*, 187–188.

Blanchard, E. B., Hickling, E. J., Taylor, A. E., Forneris, C. A., Loos, W., & Jacard, J. (1995). Effects of varying scoring rules of the Clinician-Administered PTSD Scale (CAPS) for the diagnosis of PTSD in motor vehicle accident victims. *Behaviour Research and Therapy, 33*, 471–475.

Blanchard, E. B., Jones-Alexander, J., Buckley, T. C., & Forneris, C. A. (1996). Psychometric properties of the PTSD Checklist (PCL). *Behaviour Research and Therapy, 34*, 669–673. doi:10.1016/0005-7967(96)00033-2

Bollinger, A. R., Brief, D. J., & Keane, T. M. (2001, August). *Relapse prevention and trauma treatment in a triply diagnosed population.* Symposium (Integrated Care- Clients with HIV, psychiatric, and substance abuse diagnoses) conducted at the annual convention of the American Psychological Association, San Francisco, CA.

Bollinger, A. R., Greene, L., Soto, T., & Wagner-Raphael, L. I. (2000, April). *Models for delivering integrated HIV/AIDS treatment: A multi-site study.* Symposium conducted at the annual convention of the Society of Behavioral Medicine, Nashville, TN.

Bollinger, A. R., Riggs, D. S., Blake, D. D., & Ruzek, J. I. (2000). Prevalence of personality disorders among combat veterans with posttraumatic stress disorder. *Journal of Traumatic Stress, 13*, 255–270. doi:10.1023/A:1007706727869

Boscarino, J. A. (1997). Diseases among men 20 years after exposure to severe stress: Implications for clinical research and medical care. *Psychosomatic Medicine, 59*, 605–614.

Boscarino, J. A., & Chang, J. (1999). Electrocardiogram abnormalities among men with stress-related psychiatric disorders: Implications for coronary heart disease and clinical research. *Annals of Behavioral Medicine, 21*, 227–234.

Breslau, N., Peterson, E. L., Kessler, R. C., & Schultz, L. R. (1999). Short screening scale for *DSM-IV* posttraumatic stress disorder. *American Journal of Psychiatry, 156*, 908–911.

Brief, D. J., Bollinger, A. R., Vielhauer, M. J., Morgan, E. E., Berger-Greenstein, J. A., Brady, S. M., et al. (2004). HIV, trauma, PTSD, and substance use: Understanding the interface and implications. *AIDS Care, 16*, S97–S129. doi:10.1080/09540120412301315259

Connor, K. M., & Davidson, J. R. (1999). Further psychometric assessment of the TOP-8: A brief interview-based measure of PTSD. *Depression and Anxiety, 9*, 135–137.

Cordova, M. J., Andrykowski, M. A., Kenady, D., McGrath, P., Sloan, D., & Redd, W. (1995). Frequency and correlates of posttraumatic stress disorder-like symptoms after treatment for breast cancer. *Journal of Consulting and Clinical Psychology, 63*, 981–986. doi:10.1037//0022-006X.63.6.981

Cuevas, C. A., Bollinger, A. R., Vielhauer, M. J., Morgan, E. E., Sohler, N. L., Brief, D. J., et al. (2006). HIV/AIDS Cost Study: Construct validity and factor structure of the PTSD Checklist in dually diagnosed HIV-seropositive adults. *Journal of Trauma Practice, 5*, 29–51. doi:10.1300/J189v05n04_02

Dobie, D. J., Kivlahan, D. R., Maynard, C., Bush, K. R., McFall, M., Epler, A. J., et al. (2002). Screening for post-traumatic stress disorder in female Veteran's Affairs

, Kaloupek, D. G., Klauminzer, G., Charney,
:ale for assessing current and lifetime PTSD:
-188.
.. E., Forneris, C. A., Loos, W., & Jacard, J.
of the Clinician-Administered PTSD Scale
motor vehicle accident victims. *Behaviour*

ley, T. C., & Forneris, C. A. (1996). Psycho-
(PCL). *Behaviour Research and Therapy, 34,*
)33-2
T. M. (2001, August). *Relapse prevention*
nosed population. Symposium (Integrated
ınd substance abuse diagnoses) conducted
merican Psychological Association, San

ıgner-Raphael, L. I. (2000, April). *Models for*
ıt: A multi-site study. Symposium conducted
f Behavioral Medicine, Nashville, TN.
ɛ Ruzek, J. I. (2000). Prevalence of personality
ɔsttraumatic stress disorder. *Journal of Trau-*
.:1007706727869
ıen 20 years after exposure to severe stress:
nedical care. *Psychosomatic Medicine, 59,*

:ocardiogram abnormalities among men with
cations for coronary heart disease and clinical
21, 227–234.
Schultz, L. R. (1999). Short screening scale for
rican Journal of Psychiatry, 156, 908–911.
. J., Morgan, E. E., Berger-Greenstein, J. A.,
PTSD, and substance use: Understanding the
Care, 16, S97–S129. doi:10.1080/

ırther psychometric assessment of the TOP-8:
). *Depression and Anxiety, 9,* 135–137.
dy, D., McGrath, P., Sloan, D., & Redd, W.
traumatic stress disorder-like symptoms after
ısulting and Clinical Psychology, 63, 981–986.

1. J., Morgan, E. E., Sohler, N. L., Brief, D. J.,
'onstruct validity and factor structure of the
IIV-seropositive adults. *Journal of Trauma*
ı04_02
Bush, K. R., McFall, M., Epler, A. J., et al.
tress disorder in female Veteran's Affairs

patients: Validation of the PTSD Checklist. *General Hospital Psychiatry, 24,* 367–374. doi:10.1016/S0163-8343(02)00207-4

First, M. B., Spitzer, R. L., Gibbon, M., & Williams, J. B. W. (1997). *Structured Clinical Interview for DSM-IV Personality Disorders (SCID-II).* Washington, DC: American Psychiatric Press.

First, M. B., Spitzer, R. L., Gibbon M., & Williams, J. B.W. (2002, November). *Structured Clinical Interview for DSM-IV-TR Axis I Disorders, Research Version, Patient Edition With Psychotic Screen (SCID-I/P W/ PSY SCREEN).* New York: Biometrics Research, New York State Psychiatric Institute.

Forbes, D., Creamer, M., & Biddle, D. (2001). The validity of the PTSD Checklist as a measure of symptomatic change in combat-related PTSD. *Behaviour Research and Therapy, 39,* 977–986. doi:10.1016/S0005-7967(00)00084-X

Friedman, M. J., & Schnurr, P. P. (1995). The relationship between trauma, posttraumatic stress disorder, and physical health. In M. J. Friedman, D. S. Charney, & A. Y. Deutch (Eds.), *Neurobiological and clinical consequences of stress: From normal adaptation to post-traumatic stress disorder* (pp. 507–524). Philadelphia: Raven.

Green, B. L., & Kimerling, R. (2004). Trauma, posttraumatic stress disorder, and health status. In P. P. Schnurr & B. L. Green (Eds.), *Trauma and health: Physical consequences of exposure to extreme stress* (pp. 13–42). Washington, DC: American Psychological Association. doi:10.1037/10723-002

Jacobsen, P. B., Widows, M. R., Hann, D. M., Andrykowski, M. A., Kronish, L. E., & Fields, K. K. (1998). Posttraumatic stress disorder symptoms after bone marrow transplanation for breast cancer. *Psychosomatic Medicine, 60,* 366–371.

Keane, T. M., & Barlow, D. H. (2002). Posttraumatic stress disorder. In D. H. Barlow (Ed.), *Anxiety and its disorders* (2nd ed., pp. 418–453). New York: Guilford.

Kelly, B., Raphael, B., Judd, F., Kernutt, G., Burnett, P., & Burrows, G. (1998). Posttraumatic stress disorder in response to HIV infection. *General Hospital Psychiatry, 20,* 345–352. doi:10.1016/S0163-8343(98)00042-5

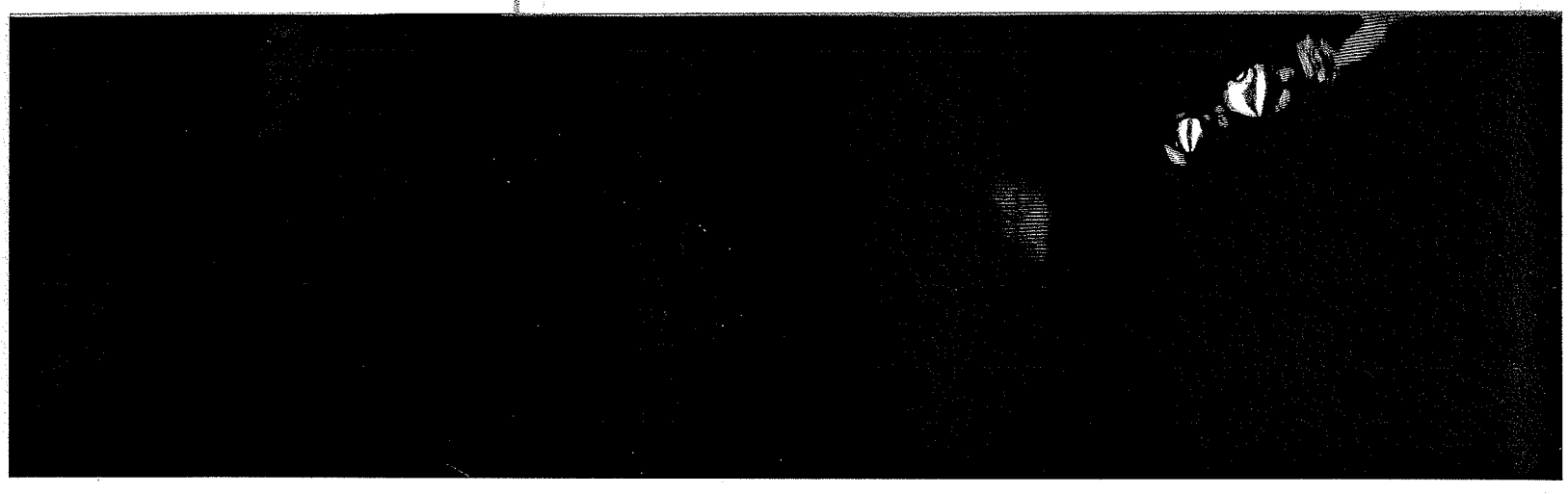
Kessler, R. C., Sonnega, A., Bromet, E., Hughes, M., & Nelson, C. B. (1995). Posttraumatic stress disorder in the National Comorbidity Survey. *Archives of General Psychiatry, 52,* 1048–1060.

Kimerling, R., Calhoun, K. S., Forehand, R., Armistead, L., Morse, E., Morse, P., et al. (1999). Traumatic stress in HIV-infected women. *AIDS Education and Prevention, 11,* 321–330.

Kimerling, R., Ouimette, P., Prins, A., Nisco, P., Lawler, C., Cronkite, R., et al. (2006). Utility of a short screening scale for *DSM-IV* PTSD in primary care. *Journal of General Internal Medicine, 21,* 65–67. doi:10.1111/j.1525-1497.2005.00292.x

Kimerling, R., Trafton, J. A., & Nguyen, B. (2006). Validation of a brief screen for Posttraumatic stress disorder with substance use disorder patients. *Addictive Behaviors, 31,* 2074–2079. doi:10.1016/j.addbeh.2006.02.008

Lang, A. J., Laffaye, C., Satz, L. E., Dresselhaus, T. R., & Stein, M. B. (2003). Sensitivity and specificity of the PTSD Checklist in detecting PTSD in female veterans in primary care. *Journal of Traumatic Stress, 16,* 257–264. doi:10.1023/A:1023796007788



Loranger, A. W. (1992). Are current self-report and interview measures adequate for epidemiological studies of personality disorders. *Journal of Personality Disorders, 6*, 313–325.

Manne, S. L., DuHamel, K., Gallelli, K., Sorgen, K., & Redd, W. H. (1998). PTSD among mothers of pediatric cancer survivors: Diagnosis, comorbidity, and utility of the PTSD Checklist as a screening instrument. *Journal of Pediatric Psychology, 23*, 357–366. doi:10.1002/1099-1611(200009/10)9:5<372::AID-PON471>3.3.CO;2-T

Martinez, A., Israelski, D., Walker, C., & Koopman, C. (2002). Posttraumatic stress disorder in women attending human immunodeficiency virus outpatient clinics. *AIDS Patient Care and STDs, 16*, 283–291. doi:10.1089/1087291026006671

Meltzer-Brody, S., Churchill, E., & Davidson, J. R. (1999). Derivation of the SPAN, a brief diagnostic screening test for post-traumatic stress disorder. *Psychiatry Research, 88*, 63–70. doi:10.1016/S0165-1781(99)00070–0

Mueser, K. T., Rosenberg, S. D., Fox, L., Salyers, M. P., Ford, J. D., & Carty, P. (2001). Psychometric evaluation of trauma and posttraumatic stress disorder assessments in persons with severe mental illness. *Psychological Assessment, 13*, 110–117. doi:10.1016/S0920–9964(01)00173–6

Prins, A., Ouimette, P., Kimerling, R., Cameron, R. P., Hugelshofter, D. S., Shaw-Hegwer, J., et al. (2003). The primary care PTSD screen (PC-PTSD): Development and operating characteristics. *Primary Care Psychiatry, 9*, 9–14. doi:10.1185/135525703125002360

Read, J. P., Bollinger, A. R., & Sharkansky, E. (2003). Assessment of co-morbid substance use disorder and posttraumatic stress disorder. In P. Ouimette & P. J. Brown (Eds.), *PTSD and substance abuse: Causes, consequences, and treatment of comorbid disorders* (pp. 111–125). Washington, DC: American Psychological Association. doi:0.1037/ 10460-006

Ruggiero, K. J., Del Ben, K. D., Scotti, J. R., & Rabalais, A. E. (2003). Psychometric properties of the PTSD Checklist–Civilian Version. *Journal of Traumatic Stress, 16*, 495–502. doi:10.1023/A:1025714729117

Sackett, D. L., Haynes, R. B., & Tugwell, P. (1985). *Clinical epidemiology: A basic science for clinical medicine*. Boston: Little, Brown.

Schnurr, P. P., Ford, J. D., Friedman, M. J., Green, B. L., Dain, B. J., & Sengupta, A. (2000). Predictors and outcomes of posttraumatic stress disorder in World War II veterans exposed to mustard gas. *Journal of Counseling and Clinical Psychology, 68*, 258–268. doi:10.1037//0022-006X.68.2.258

Schnurr, P. P., Friedman, M. J., Sengupta, A., Jankowski, M. K., & Holmes, T. (2000). PTSD and utilization of medical treatment services among male Vietnam veterans. *Journal of Nervous and Mental Disease, 188*, 496–504. doi:10.1097/00005053-200008000-00004

Schnurr, P. P., & Jankowski, M. K. (1999). Physical health and post-traumatic stress disorder: Review and synthesis. *Seminars in Clinical Neuropsychiatry, 4*, 295–304.

Schnurr, P. P., & Spiro, A., III. (1999). Combat exposure, posttraumatic stress disorder symptoms, and health behaviors as predictors of self-reported physical health in older veterans. *Journal of Nervous and Mental Disease, 187*, 353–359. doi:10.1097/00005053-99906000-00004

-report and interview measures adequate for isorders. *Journal of Personality Disorders, 6,*

rgen, K., & Redd, W. H. (1998). PTSD among iagnosis, comorbidity, and utility of the PTSD *urnal of Pediatric Psychology, 23,* 357–366. 372::AID-PON471>3.3.CO;2-T

oopman, C. (2002). Posttraumatic stress disor- modeficiency virus outpatient clinics. *AIDS* i:10.1089/1087291026006671

son, J. R. (1999). Derivation of the SPAN, a raumatic stress disorder. *Psychiatry Research,* 00070–0

alyers, M. P., Ford, J. D., & Carty, P. (2001). posttraumatic stress disorder assessments in *Psychological Assessment, 13,* 110–117.

ameron, R. P., Hugelshofter, D. S., Shaw- care PTSD screen (PC-PTSD): Development y *Care Psychiatry, 9,* 9–14. doi:10.1185/

nsky, E. (2003). Assessment of co-morbid atic stress disorder. In P. Ouimette & P. J. *use: Causes, consequences, and treatment of* shington, DC: American Psychological Asso-

. R., & Rabalais, A. E. (2003). Psychometric ian Version. *Journal of Traumatic Stress, 16,* 7

l, P. (1985). *Clinical epidemiology: A basic* ittle, Brown.

. J., Green, B. L., Dain, B. J., & Sengupta, posttraumatic stress disorder in World War II *al of Counseling and Clinical Psychology, 68,* .258

A., Jankowski, M. K., & Holmes, T. (2000). nent services among male Vietnam veterans. *ease, 188,* 496–504. doi:10.1097/00005053-

9). Physical health and post-traumatic stress *rs in Clinical Neuropsychiatry, 4,* 295–304.

ombat exposure, posttraumatic stress disorder lictors of self-reported physical health in older *ental Disease, 187,* 353–359. doi:10.1097/

Schnurr, P. P., Spiro, A., III, & Paris, A. H. (2000). Physician-diagnosed medical disorders in relation to PTSD symptoms in older male military veterans. *Health Psychology, 19,* 91–97. doi:10.1037//0278-6133.19.1.91

Smith, M. Y., Egert, J., Winkel, G., & Jacobson, J. (2002). The impact of PTSD on pain experience in persons with HIV/AIDS. *Pain, 98,* 9–17. doi:10.1016/S0304-3959(01)00431-6

Smith, M. Y., Redd, W., DuHamel, K., Vickberg, S. J., & Ricketts, P. (1999). Validation of the PTSD Checklist–Civilian version in survivors of bone marrow transplantation. *Journal of Traumatic Stress, 12,* 485–499. doi:10.1023/A:1024719104351

Spiro, A., III, Hankin, C. S., Leonard, L. M., Stylianou, I., & Kazis, L. (February 2000). *Prevalence of PTSD among VA ambulatory care patients.* Symposium conducted at VA Health Services Research and Development 18th Annual Meeting, Washington, DC.

Stein, M. B., McQuaid, J. R., Pedrelli, P., Lenox, R., & McCahill, M. E. (February 2000). Posttraumatic stress disorder in the primary care medical setting. *General Hospital Psychiatry, 22,* 261–269. doi:10.1016/S0163-8343(00)00080-3

Taft, C. T., Stern, A. S., King, L. A., & King. D. W. (1999). Modeling physical health status and functional health status: The role of combat exposure, posttraumatic stress disorder, and personal resource attributes. *Journal of Traumatic Stress, 12,* 3–23. doi:10.1023/A:1024786030358

Ventureyra, V. A. G., Yao, S. N., Cottraux, J., Note, I., & Mey-Guillard, C. D. (2002). The validation of the Posttraumatic Stress Disorder Checklist Scale in posttraumatic stress disorder and nonclinical subjects. *Psychotherapy and Psychosomatics, 71,* 47–53. doi:10.1159/000049343

Wagner, A. W., Wolfe, J., Rotnitsky, A., Proctor, S. P., & Erickson, D. J. (2000). An investigation of the impact of posttraumatic stress disorder on physical health. *Journal of Traumatic Stress, 13,* 41–55. doi:10.1023/A:1007716813407

Walker, E. A., Newman, E., Dobie, D. J., Ciechanowski, P., & Katon, W. (2002). Validation of the PTSD Checklist in an HMO sample of women. *General Hospital Psychiatry, 24,* 375–380. doi:10.1016/S0163-8343(02)00203-7

Watson, C. (1990). Psychometric posttraumatic stress disorder measurement techniques: A review. *Psychological Assessment: A Journal of Consulting and Clinical Psychology, 2,* 460–469. doi:10.1037//1040-3590.2.4.460

Weathers, F. W., & Ford, J. D. (1996). Psychometric review of PTSD Checklist. In B. H. Stamm (Ed.), *Measurement of stress, trauma, and adaptation* (pp. 250–251). Lutherville, MD: Sidran Press.

Weathers, F. W., Keane, T. M., & Davidson, J. R. T. (2001). Clinician-Administered PTSD Scale: A review of the first ten years of research. *Depression and Anxiety, 13,* 132–156. doi:10.1002/da.1029

Weathers, F. W., Litz, B. T., Herman, D. S., Huska, J. A., & Keane, T. M. (November 1993). *The PTSD Checklist (PCL): Reliability, validity, and diagnostic utility.* Paper presented at the annual meeting of the International Society for Traumatic Stress Studies, San Antonio, TX.

Weathers, F. W., Ruscio, A. M., & Keane, T. M. (1999). Psychometric properties of nine scoring rules for the Clinician-Administered Posttraumatic Stress Disorder Scale. *Psychological Assessment, 11,* 124–133. doi:10.1037//1040-3590.11.2.124

Wolfe, J., & Keane, T. M. (1993). New perspectives in the assessment and diagnosis of combat-related posttraumatic stress disorder. In J. P. Wilson & B. Raphel (Eds.), *International handbook of traumatic stress syndromes* (pp. 165–177). New York: Plenum.

Zatzick, D. F., Marmar, C. R., Weiss, D. S., Browner, W. S., Metzler, T. J., Golding, J. M., et al. (1997). Posttraumatic stress disorder and functioning and quality of life outcomes in a nationally representative sample of male Vietnam veterans. *American Journal of Psychiatry, 154*, 1690–1695.